Journal of Superconductivity and Novel Magnetism 2002 vol.15 N5, pages 447-450

Electronic theory for the magnetic anisotropy in Sr2RuO 4

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Abstract

Using a three-band Hubbard Hamiltonian we calculated within the random-phase-approximation the spin susceptibility, χ(q, ω), and NMR spin-lattice relaxation rate 1/T1, in the normal state of the triplet superconductor Sr2RuO4, and obtained quantitative agreement with experimental data. Most importantly, we found that because of spin-orbit coupling the out-of-plane component of the spin susceptibility χzz(q, ω) becomes two times larger than the in-plane one at low temperatures. We analyze in particular the role of the xy-band in the magnetic anisotropy. © 2002 Plenum Publishing Corporation.

Keywords

Magnetic dynamics, Ruthenates, Spin-orbit coupling